

recently been published by the Zi-ka-wei Observatory¹ show that during that period a total of 90 typhoons occurred in the month of July. Thus, some three or four of these tropical storms may be expected each year in this month. As nearly as can be judged from reports that have been received, four distinct typhoons occurred in July of this year. This statement is made, however, subject to modification by later reports.

The first of these storms appears to have reached the China coast at a point about midway between Hongkong and Shanghai on the 15th or 16th. The American steamship *Columbia*, Capt. Geo. Dockstader, from Hongkong for Shanghai, was under its influence during the 14th, 15th, and 16th, though not near the center at any time. The *Columbia* left the former port at 4 p. m. on the 14th with a light SW. wind and falling barometer, the reading at that hour being 29.67 inches. The barometer continued to fall steadily, reaching 29.37 inches at midnight of the 15th, the wind, however, continuing light, WSW. During the early morning of the 16th the wind freshened and backed to SSW., force 6. Later, at 4 a. m., it increased to force 10, the barometer at that hour reading 29.20 inches, corrected. This was the lowest reading recorded. By 12 p. m. of the 16th the barometer had risen to 29.55 inches, though subsequently, during the early hours of the 17th, there was a further slight fall to 29.35 inches; this was at 4 a. m. The wind at that hour was ESE., force 5. At noon on the 17th the barometer read 29.64 inches, wind E., light, the *Columbia* at that time nearing Shanghai.

The British steamship *Tyndareus*, Capt. C. B. Francis, from Manila toward Kobe, via Hongkong and Keelung, was also under the influence of this storm during the 14th and 15th. On the 14th (noon position, G. M. T., latitude 27° 29' N., longitude 123° 12' E.) the *Tyndareus* experienced strong N. to NNE. winds with frequent hard squalls and a high, confused sea. The barometer at noon read 29.04 inches, corrected. These conditions continued through the 15th. The lowest barometer recorded was 28.96 inches at 4 p. m. of the 15th, local time, and the highest force of wind 11, from ESE.

¹ Atlas of the Tracks of 620 Typhoons, 1893-1918. Louis Froc, S. J., Shanghai, 1920. Reference to this valuable work will be made in a subsequent issue of the REVIEW.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

British Isles.—* * * The month was wet, cool, and cloudy, with a marked deficiency of sunshine. * * * The general rainfall expressed as a percentage of the average was: England and Wales, 161; Scotland, 104; Ireland, 153. * * *

Spain.—Madrid, July 27.—Latest reports from Barcelona indicate that the recent storm which swept northern and northwestern Spain caused damage estimated at millions of pesetas. Numbers of houses and stores collapsed and others were inundated as torrents of water rushed through the streets. Quantities of goods stored on the wharves, including large consignments of German dyes of great value, were washed to sea.—*Brooklyn Daily Eagle*, July 28, 1920.

Mediterranean Region.—In Italy and the eastern Mediterranean the weather throughout the month was fine and warm, temperatures frequently exceeding 90° F., while at Cairo on the 12th a temperature of 101° F. was reached.¹

Iceland.—On the 27th a deep depression approached and remained in the vicinity of Iceland * * * [causing]

Nothing is known as yet regarding the earlier history of this storm.

Information regarding three subsequent typhoons is only meager and is contained in a report received from the U. S. Army Transport *Great Northern*, Capt. L. R. M. Kerr, from San Francisco for Manila, via Honolulu. Capt. Kerr reports that from 5 a. m. of the 21st to 2 p. m. of the 24th the *Great Northern* was hove to at the south end of Paagan Island, Ladrone Group, waiting for three typhoons in the near vicinity to leave. The typhoons were as follows: One north of Guam, moving north; a second in or near the Balingtang Channel; and a third near Shanghai. It is assumed that Capt. Kerr received information respecting these typhoons by radio. Aside from the typhoons mentioned the only storm of consequence during the month appears to have been one that occurred near mid ocean on the 6th and 7th. The following report of this storm has been received from Mr. E. Turney, fourth officer and observer on the British R. M. S. *Empress of Asia*, Capt. A. J. Hailey, R. N. R., Vancouver for Yokohama.

On Tuesday, the 6th, at 7 a. m., the barometer commenced to fall fast, with a moderate wind and sea. This was in latitude 51° 30' N., longitude 171° 9' W. At noon the barometer was 30.02 inches with a fresh wind increasing. At 3 p. m., barometer 29.71 inches, moderate gale. At 8 p. m., gale continuing, with heavy swell from the SW., rough sea and dense fog. At 9 p. m. gale began to moderate; dense fog continued. Midnight, barometer 29.09 inches, light wind, dense fog. At 2.10 a. m., 8th, ship meanwhile having crossed 180th Meridian wind shifted to NW. and fog cleared; barometer, 29.09 inches. Four a. m. barometer 29.07 inches, moderate wind, SSE. swell. At 5.30 a. m. barometer started to rise; ship's position, latitude 50° 20' N., longitude 177° 58' E. At 6 a. m., barometer 29.05 inches, strong wind. Noon, barometer 29.24 inches, strong WNW. wind. Four p. m., barometer 29.31 inches, strong wind.

Reports from 16 vessels on coastwise voyages show no unusual weather conditions.

Observers on several vessels report having seen shooting stars or meteors. The most important of these appears to have been one observed on board the American S. S. *Olen*, Capt. C. A. Darling, Kobe for Portland. Mr. Wm. Wallace Flynn, third officer and observer on the *Olen*, reports that on July 16, at 10.45 p. m., a brilliant meteor was seen lasting 9 seconds. Ship's position at 9.20 p. m., latitude 36° 21' N., longitude 143° 15' E.

a continuation of unsettled weather in Northwest Europe up to the end of the month.¹

Korea.—Honolulu, July 21.—Considerable property damage has been done by floods in the Seoul and Fusan districts of Korea, said Tokyo cables received to-day by Nipu Jiji, a Japanese language newspaper here.—*Chicago Evening Post*, July 21, 1920.

Philippine Islands.—Manila, July 26.—Thousands were rendered homeless by a typhoon which, accompanied by torrential rains, swept the Island of Luzon during the past ten days or two weeks, causing tremendous damage.

A dike of the Turlac River, Central Luzon, was broken, flooding thousands of acres of rice and sugar lands and carrying off hundreds of small houses. Loss of life was reported small.—*N. Y. American*, July 27, 1920.

India.—A message from Simla states that the monsoon in India continues to blow steadily.¹

South Pacific Ocean.—Hit by the tail end of a terrific hurricane when three days out of Sydney and tossed about on a high sea for seventy-two hours, the Oceanic liner *Ventura* made port yesterday.

¹ The Meteorological Magazine, Aug., 1920, 154-155, 160.

Five members of the crew were seriously injured when attempting to batten down one of the hatches, and the full list of 200 passengers were confined to their state-rooms with seasickness during the fury of the storm.

The storm settled down about the vessel early in the evening of July 23. It came without warning and with severe fierceness, according to officers of the ship. (*San Francisco Examiner, August 11, 1920.*)

Argentina.—About the 14th of the month Buenos Ayres was visited by a snowstorm this being the second experienced within 300 years.¹

Australia.—Floods in Australia have done much damage to wheatlands, and heavy rains, followed by destructive floods, have occurred in Western Queensland.¹

¹ The Meteorological Magazine, Aug., 1920, 154-155, 160.

DETAILS OF THE WEATHER OF THE MONTH IN THE UNITED STATES.

CYCLONES AND ANTICYCLONES.

By R. HANSON WEIGHTMAN, Meteorologist.

Cyclones.—Alberta LOWS were the most frequent and there were few secondary developments. The table shows the number of LOWS by types.

LOWS.

	Albera.	North Pa- cific.	South Pa- cific.	Northern Rocky Mt.	Colorado.	Texas.	East Gulf.	South At- lantic.	Central.	Total.
July, 1920.....	4.0	0.0	0.0	2.0	1.0	0.0	0.0	1.0	3.0	11.0
Average number, 1892- 1912.....	4.8	0.7	0.3	0.5	0.9	0.2	0.1	0.1	0.9	8.6

Anticyclones.—The Alberta type was by far the greatest in number, as shown by the table which follows:

THE WEATHER ELEMENTS.

By P. C. DAY, Climatologist and Chief of Division.

[Weather Bureau, Washington, Sept. 1, 1920.]

PRESSURE AND WINDS.

The distribution of pressure over the United States and Canada during the month was according to the usual summer type, although the averages were above the normal for the month in all districts save over the eastern shores of the Great Lakes and along the St. Lawrence Valley where they were slightly below.

No storms of importance traversed extensive paths, but pressure was moderately low over eastern districts on the 3d and 4th, and a LOW that developed over the Plains region about the middle of the first decade had a fairly distinctive movement to the Great Lakes and St. Lawrence Valley during the following few days. Also on the 18th pressure was moderately low in the Lake region and during the following two days, overspread the more eastern districts.

The areas of high pressure were much better defined than the LOWS and entered the United States from the Canadian territories to eastward of the Rocky Mountains, instead of from the far northwestern part of the United States, as is frequently the case during the summer months.

The general circulation of the atmosphere exhibited the usual sluggish conditions common to the mid-summer period, and winds of high velocity were infrequent, save in connection with local thunderstorms. High pressure over the southeastern States favored southerly winds over nearly all districts from the Plateau region eastward to the Atlantic coast, except along the Canadian border from the Great Lakes to the Pacific where they

HIGHS.

	North Pacific.	South Pacific.	Albera.	Plateau and Rocky Moun- tain region.	Hudson Bay.	Total.
July, 1920.....	1.0	1.0	6.0	0.0	1.0	9.0
Average number, 1892-1912.....	1.3	0.3	3.0	1.2	0.8	6.6

NOTE.—Since the inauguration of tables, giving the numbers of HIGHS and LOWS each month, in the January, 1920, number of the MONTHLY WEATHER REVIEW, it has been noted that the numbers of HIGHS and LOWS has exceeded in most cases the average for the period 1892-1912, and in a number of cases to a considerable extent. This seeming abnormality is, however, apparent rather than real, for in the greater part of the period for which the averages are computed, only the most important HIGHS and LOWS were plotted, whereas at the present time the policy is to track all HIGHS and LOWS that affected the weather to any considerable extent and this can be followed for 3 or more consecutive 12-hour periods on the weather map.

were frequently from northerly or westerly points. Along the immediate Pacific coast they were in the main from some westerly quarter.

TEMPERATURE.

Low pressure over the Central Valleys and to the westward during the first week of the month induced southerly winds and high temperatures over most districts, but particularly between the Mississippi River and the Rocky Mountains where maximum temperatures frequently ranged from 90° to 100° or more. Some of the highest temperatures of the month were recorded during this period over the East Gulf and South Atlantic States. About the 5th, higher pressure advanced into the middle Plains and a change to somewhat lower temperatures occurred over most districts. As the high area moved eastward, there was a general but slow return to the summer type of low pressure over the interior districts with a corresponding rise in temperature to about the normal near the end of the second week.

By the middle of the month a change to higher pressure had again brought cooler weather into the Central Valleys, extending thence eastward during the few days immediately following. In the Northwest and far West the temperatures continued generally slightly above normal during most of the first half of the month, the highest readings occurring on the 7th and 8th over Arizona, New Mexico, Utah, and portions of adjoining States.

During the early part of the third decade the development of low pressure over the districts between the